Culture and the Remembering of Trauma

Laura Jobson*

Medical Research Council Cognition and Brain Sciences Unit, Cambridge UK and University of East Anglia, Norwich UK

Ali Reza Moradi

Kharazmi University, Tehran, Iran and Institute for Cognitive Sciences Studies, Tehran, Iran

Vafa Rahimi-Movaghar

Sina Trauma and Surgery Research Center, Tehran University of Medical Sciences, Tehran, Iran

Martin Conway

Department of Psychology, City University London, U.K.

Tim Dalgleish

Medical Research Council Cognition and Brain Sciences Unit, Cambridge UK

* Corresponding Author: Norwich Medical School, University of East Anglia, Norwich, England, NR4 7TJ. Email: L.Jobson@uea.ac.uk, Phone: +44 1603 591158, Fax: +44 1603 591132

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Abstract

This research examined the influence of culture and posttraumatic stress disorder (PTSD) on global autobiographical remembering (Study 1a) and on the phenomenological properties (Study 1b) and memory content variables (Study 1c) of trauma-specific autobiographical remembering. Australian, British and Iranian trauma survivors with and without PTSD completed the Autobiographical Memory Test, Self-Defining Memory Task, Autobiographical Memory Questionnaire and provided trauma and negative memory narratives. It was found that there were pan-cultural deficits and distortions in the global autobiographical remembering of those with PTSD (Study 1a). The presence of PTSD was found to moderate the usual effect of culture on the phenomenological properties of the trauma memory (Study 1b). Finally, those with PTSD, regardless of cultural background, had significantly fewer expressions of autonomy and self-determination in their autobiographical remembering than those without PTSD (Study 1c). The findings suggest that pan-culturally those with PTSD have similar disruptions and distortions in their autobiographical remembering.

Keywords: Culture, Trauma, Autobiographical Memory, Posttraumatic Stress Disorder

Culture and the Remembering of Trauma

Autobiographical memory is central to current understandings of posttraumatic stress disorder (PTSD). That is, those with PTSD exhibit certain disruptions and distortions in their autobiographical remembering of the trauma event and show global differences in their profiles of more general autobiographical remembering (Brewin, 2011; Brewin, Dalgleish, & Joseph, 1996; Dalgleish, 2004; Ehlers & Clark, 2000). While an impressive body of literature now exists in terms of the role of autobiographical remembering in PTSD, there remains a significant gap in this literature. Specifically, the majority of the literature pertains to trauma survivors from Western cultures, despite the increasing recognition that PTSD is observed in many different societies and cultures (Foa, Keane, Friedman, & Cohen, 2009) and substantial research in the area of cross-culture psychology suggesting that everyday autobiographical remembering differs across cultures (Jobson, 2009a). Thus, the question remains, how does culture influence the remembering of trauma and thus, the etiology, maintenance and treatment of PTSD?

The hallmark symptom of PTSD is the intrusive recollection of autobiographical memories of the trauma which often occur as vivid, highly emotive, sensory-laden flashbacks, reliving experiences, intrusive thoughts and images, and nightmares (Brewin et al., 1996). Paradoxically, this elevated *involuntary* access to memories of the trauma is often accompanied by compromised *voluntary* access to coherent accounts of what happened during traumatic experiences (Brewin, 2011). Hence, the phenomenological properties of trauma accounts often include being fragmented, temporally disorganized and laden with sensory-perceptual features (Brewin 2011; Brewin et al., 1996; Foa, Molnar, & Cashman, 1995; Jelinek, Randjbar, Seifert, Kellner, & Moritz, 2009; Jones, Harvey, & Brewin, 2007; O'Kearney & Perrott, 2006). These autobiographical memory difficulties have been found to

extend beyond the trauma memory to more global autobiographical remembering. For instance, research has found that those with PTSD have significant difficulties in providing specific autobiographical memories of everyday events (i.e. memories of discrete occasions that occurred at a particular time and place). Instead PTSD sufferers tend to retrieve categoric overgeneral memories (OGM) (i.e. memories for collections of events) (see Moore & Zoellner, 2007; Williams et al., 2007). Another example of a global autobiographical memory difficulty relates to memories of experiences that significantly reflect and inform one's identity. Research has shown that when asked to provide such 'self-defining memories', the responses of those with PTSD, when compared to trauma survivors without PTSD, tend to be strongly associated with their trauma experience (Jobson & O'Kearney, 2008a; Sutherland & Bryant, 2005).

These autobiographical memory disruptions can be conceptualized within our Self Memory System model (SMS, Conway, 2005; Conway & Pleydell-Pearce, 2000). The SMS posits that a motivational hierarchy of goals (the working self) encodes and integrates memories into an autobiographical knowledge base – a hierarchically arranged database of memories with general summaries of broad categories of lifetime periods at the top and increasingly specific details of individual events at the bottom. Voluntary retrieval of specific event details requires navigating down this hierarchy. However, retrieval can also occur via direct, involuntary access to specific event representations in the memory hierarchy thus bypassing the hierarchical search. The integration of autobiographical memories into the autobiographical knowledge base allows for elaboration of the memory, which enhances the first retrieval route and inhibits the second direct access route. The SMS proposes trauma can pose a threat to current goals to which the working self cannot readily adapt. Hence, there are no currently active goals that can be used to integrate the trauma memory into the

autobiographical knowledge base. Instead the trauma memory remains an event-specific representation of the event and is not contextualized within the autobiographical knowledge base.

The SMS provides an account for the three autobiographical memory disruptions mentioned above. First, as the trauma memory is not integrated into the autobiographical knowledge base it is difficult to retrieve the trauma memory using the hierarchical search as it lacks the requisite connections to other autobiographical memories. Rather, it is more likely to be activated, involuntarily, via a direct retrieval route that operates via a close link between a given retrieval cue and the trauma memory representations. Hence PTSD sufferers experience frequent intrusive recollections alongside their compromised voluntary access to coherent accounts of the trauma memory. Second, in terms of OGM, we have suggested elsewhere (see Williams et al., 2007), that in attempts to avoid the recollection of these specific details of the trauma, for PTSD sufferers the hierarchical memory search can get diverted towards those higher-level generic representations of personal experience stored higher in the hierarchy of the autobiographical knowledge base that represent OGMs. An OGM retrieval style may create less affect than the recollection of specific episodic memories as remaining at this level of more general information reduces the impact of retrieving potentially emotional material. Such strategies, if successful in avoiding aversive consequences, will be negatively reinforced. In time, attempts to minimize the retrieval of specific memories, in order to reduce retrieval of memories that are painful and affect-laden, can develop into an inflexible and habitual autobiographical retrieval pattern and thus, a more generic form of avoidance. Consequently, not only do coherent details of the trauma itself become difficult to access voluntarily but *all* specific memory access becomes compromised. Third, the SMS emphasizes the need for self-consistency and coherence; the working self

aims to reduce the inconsistency between desired goals and the trauma and minimize memories that challenge or threaten the coherence of the self-system. Coherence between the trauma and the self may be accomplished, to a point, through inhibition or distortion of the trauma memory. Over time, these inconsistencies can prove too psychologically demanding and may result in transformations to the existing self-concept leading to the development of a self that is trauma-centered and which is reflected in self-related remembering (Conway, 2005).

Prominent PTSD models (Brewin et al., 1996; Dalgleish, 2004; Ehlers & Clark, 2000; Horowitz, 1976; Janoff-Bulman, 1988) similarly suggest that the PTSD trauma memory is not well integrated or contextualized. For instance, the dual representation theory (DRT, Brewin et al., 1996) suggests there are two memory systems that operate in parallel but one system can take precedence over the other at different times. The Situationally Accessible Memory (SAM) system is limited to material that was encoded using lower level perceptual processing of the traumatic scene, such as sights and sounds, and thus, can only be accessed involuntarily through situational reminders of the trauma. The Verbally Accessible Memory (VAM) system includes material that was consciously processed during the traumatic event and can be accessed through voluntary recall and described verbally. Ideally, SAMs are integrated with VAMs to form an elaborate and coherent account of the trauma event. However, under extreme stress the conscious processing that leads to VAMs is impaired resulting in the domination of the SAM system (Brewin et al., 1996). As a result of very little information being encoded in the VAM system, memories of the trauma are repeatedly brought to mind as sensory and emotional fragments. As the SAM system does not use a verbal code, these memories are difficult to voluntarily communicate to others and the

memories do not necessarily interact with, and get updated by, other autobiographical knowledge[1].

Culture influences autobiographical remembering through different social orientations, beliefs and values, especially those pertaining to the self; despite significant individual and situational differences within a particular society (Ross & Wang, 2010; Wang & Ross, 2005). Western cultures tend to conceptualize the self as independent, autonomous, internally coherent and as a unique collection of internal attributes whose goals are to be unique, self-expressive, realize internal attributes and promote individual goals (see Markus & Kitayama, 2010). As an individual's personal experiences are unique, memories of such experiences assist an individual in distinguishing him or herself from others and contribute to this autonomous self-construal (Ross & Wang, 2010). In many cultures, such as those in Asia, Africa and the Middle East (collectivistic cultures), however, a sense of uniqueness, independence and autonomy is less relevant to one's self-concept. Instead such cultures tend to emphasize relatedness, interdependence, and the way that the self attends to and fits in with others and the surrounding social context (Markus & Kitayama, 2010).

Research over several decades has demonstrated that these cultural differences influence autobiographical remembering. Those from Western/individualistic cultures have been found to provide more self-revealing, self-focused, lengthier accounts of specific, personal everyday events than those from collectivistic cultures who instead tend to focus on collective activities, social interactions and significant others (e.g., Jobson, 2009b, Jobson & O'Kearney, 2008b; Wang, 2008; Wang & Conway, 2004; Wang, Leichtman, & Davies, 2000, see Ross & Wang, 2010, for review). These differences in memory content variables reflect

[1] More recently the VAM system has been referred to as contextual memory (C-memory) which is abstract, contextually bound representations and its representations as C-reps. Similarly, SAMs has more recently been referred to as low-level sensation-based memory (S-memory) and its corresponding representations (S-reps) (see Brewin, Gregory, Lipton, & Burgess, 2010, for further details).

Western cultures emphasising a coherent, well-integrated life story with the individual cast as the "lead" as this affirms the self as an autonomous unit, whereas in collectivistic cultures, collective activities are often esteemed over this unique life story (Wang, 2001).

While the cross-cultural study of autobiographical memory has tended to focus on the development of narrative in autobiographical memory, research has also demonstrated that the properties of autobiographical memories culturally differ (e.g. Rubin, Schrauf, Gulgoz, & Naka, 2007). For instance, Rubin et al. (2007) found that Japanese (a collectivistic culture) participants rated many of the phenomenological properties of their autobiographical memories significantly lower than that of American (an individualistic culture) participants. They suggest that there while the underlying mechanics of memory may be cross-culturally identical, there are cultural differences in how individuals assess and experience their memories. Those from individualistic cultures may rate the phenomenological properties more highly than those from collectivistic cultures as this aligns with individualistic cultures stressing their unique autobiographical memories and with an autonomous self-construal providing a strong motivation for individuals to attend to, encode, and reflect on their autobiographical personal experiences (Ross & Wang, 2010).

We have used the SMS to account for these cultural differences elsewhere (see Conway & Jobson, 2012; Jobson, 2009a). Individuals hold conceptual knowledge about the self in relation to others, which is influenced by the cultural conception of selfhood. A focus on interdependence versus independence in the self at the cultural level influences the content, organization and phenomenological properties of an individual's autobiographical memory. Specifically, while people hold both independent and interdependent goals, one orientation is dominant depending on cultural influences. Such goals of the working self encode and integrate memories into the autobiographical knowledge base which allows for

culturally appropriate elaboration of memories. Thus, when autobiographical memories are retrieved either independence or interdependence is emphasized, which, in turn, develops, expresses and maintains the culturally-valued self.

Several questions emerge when we consider these cross-cultural findings in the context of our current understandings of PTSD. The first two questions pertain to global aspects of autobiographical remembering. First, as outlined above, difficulties in providing specific memories has been found to be associated with, and predictive of, PTSD (Moore & Zoellner, 2007). Research has demonstrated that specific autobiographical memories of personal unique experiences are emphasized in individualistic cultures as they function to differentiate the self from others and thus, contribute to the independent self-construal (Jobson, 2009b; Ross & Wang, 2010; Wang, 2001; Wang, 2009; Wang & Conway, 2004). However, general memories tend to be emphasized in collectivistic cultures as they generally feature social relations and conventions, thereby strengthening the interdependent self-construal (Ross & Wang, 2010). Therefore, an important question is whether the relationship between OGM and PTSD still holds in collectivistic populations, where an OGM retrieval style may be perceived as less problematic. Second, the SMS suggests that over time, in order to reduce inconsistencies between the trauma and self-concept (i.e. in order to maintain self-coherence), there can be transformations to the existing self-concept. This can lead to the development of a self-concept focused on the idea of being a victim of trauma or on emphasizing self-change since the event. The SMS suggests that any change in self will be motivated by a drive for self-coherence. Maintaining an internally coherent self is imperative in individualistic societies and information inconsistent with this congruent self must go through repair work to align such information. However, people from collectivistic cultures tend to be much more capable of flexibility between social roles and tolerant of differences in

their self in these roles (Suh, 2002). Therefore, a second question is whether the relationship between a trauma-defined self-concept and PTSD is evident in collectivistic populations.

The final two questions pertain to remembering of the trauma experience. The trauma memory of those with PTSD is considered to be poorly integrated and contextualized in the autobiographical knowledge base. This conceivably results in less opportunity for the usual cultural influences to exert themselves on the phenomenological properties and memory content variables of the PTSD trauma memory, as cultural influences on autobiographical remembering operate through language, encoding, integration and elaboration of the memory and hierarchical retrieval processes (see Conway & Jobson, 2012; Jobson, 2009a). Therefore, the questions arise; are there similar disruptions in the phenomenological properties (i.e. being fragmented and laden with sensory-perceptual features) of the trauma memory across cultures? And are the memory content variables of the PTSD trauma memory relatively immune to cultural influences (i.e. have less of the expected cultural emphasis on either autonomy or interdependence)?

The aim of the current research was to investigate whether PTSD and culture interact to influence these global and trauma-specific aspects of autobiographical remembering. Specifically, the research addressed the four research questions outlined above; 1) Does the relationship between OGM and PTSD still hold in collectivistic populations?; 2) Does the relationship between trauma-centered self-definition and PTSD still hold in collectivistic populations?; 3) Are there culturally similar disruptions in the phenomenological properties of the PTSD trauma memory?; and 4) Are there cultural similarities in the memory content variables of the PTSD trauma memory? These research questions were investigated using samples of trauma survivors from individualistic and collectivistic cultures. It is noted that while the same or overlapping sources were used in this research, to aid in the reporting of

findings, the findings were divided into three sub-studies. Study 1a investigated the influence of PTSD and culture on global aspects of autobiographical remembering (Research Questions 1 and 2). Study 1b investigated the influence of PTSD and culture on the phenomenological properties of trauma-specific remembering (Research Question 3). Study 1c examined the influence of PTSD and culture on the memory content variables of trauma-specific remembering (Research Question 4).

Study 1a

Study 1a investigated the influence of PTSD and culture on OGM and self-related autobiographical remembering. It was firstly hypothesized that while there would be cultural differences in autobiographical memory specificity (AMS), those with PTSD pan-culturally would engage in similar memory avoidance strategies in order to manage the memory disruptions associated with PTSD, resulting in OGM. Secondly, we proposed that universally in the aftermath of trauma, the trauma memory of those with PTSD would not align with the desired goals of the self-concept and would be hard to integrate with previously held assumptions about the self and world. Consequently, the trauma becomes central to people's mental life as they struggle to resolve these discrepancies resulting in a great deal of time being spent recalling these events and ruminating about them (Brewin, 2011; Horowitz, 1976, Janoff-Bulman, 1992). As a result, the trauma becomes highly associated with the self-concept (Brewin, 2011) and the traumatic event forms a turning point in people's construction of their own identity and a cognitive reference point for the organization of autobiographical knowledge (Berntsen & Rubin, 2006). Therefore, it was hypothesized that pan-culturally those with PTSD would also have more trauma-defined identities and personal memories than those without PTSD. Finally it has been suggested that self-concept alterations result in poorer memory for experiences about one's past (Brewin, 2011).

Therefore, Study 1a also aimed to examine the relationship between the extent of a trauma-themed self-concept and degree of OGM. It was hypothesized that there would be a significant negative correlation between higher ratings of a trauma-themed self-definition and reduced specificity of autobiographical memories.

Method

Participants

Participants were British (*n*= 38), Australian (*n*= 43) and Iranian (*n*= 40) trauma survivors living in their country of origin. Australia and Britain are considered individualistic cultures while Iran is considered a collectivistic society (Hofstede, Hofstede, & Minkov, 2010). All participants had experienced a car accident[2], physical assault or life-threatening illness that would meet PTSD Criterion A in the Diagnostic and Statistical Manual of Mental Disorders-IV-TR (DSM-IV-TR; APA, 2004). All participants were recruited from the general community by posters in public places, advertisements in local newspapers and contacts with organizations that provide treatment for trauma survivors.

Participants were allocated to either the 'met diagnosis for PTSD' group (hereon called the 'PTSD' group) or 'did not meet diagnosis for PTSD' group (hereon called the 'no PTSD' group) based on their completion of the Posttraumatic Stress Diagnostic Scale (PDS, Foa, Riggs, Dancu, & Rothbaum, 1993). The PDS was developed to provide a brief self-report instrument to assist with the diagnosis of PTSD. Parts I and II contain trauma screening questions that correspond to PTSD Criterion A DSM-IV-TR (APA, 2004). Part III contains 17 items assessing PTSD symptoms. Participants are asked to rate these items, for the past month, on a 4-point scale ranging from 0 (*not at all*) to 3 (*almost always*). The ratings of the items are summed to calculate a total severity score. The PDS then ascertains

[2] To control for potential influence of varying trauma types, the analyses were also conducted using just car accident trauma survivors. A similar pattern of results emerged.

duration of the symptoms (Criteria E) and impairment of functioning (Criteria F). To be considered a positive screen on the PDS, a participant must meet Criterion A, endorse a broad enough range of symptoms to meet Criteria B (re-experiencing), C (avoidance), and D (increased arousal), have symptoms present for over one month, and indicate that the disturbances are causing significant impairment in functioning (i.e. a screening diagnosis of PTSD is only made if all six DSM-IV criteria are endorsed). The PDS has good convergent validity with the Structured Clinical Interview for the DSM-IV (SCID; Spitzer, Williams & Gibbon, 1987) (Foa et al., 1993), has good psychometric properties, including with Iranian populations (Mirzamani, Mohammadi, & Besharat, 2006; Mirzamani, Mohammadi, Mahmoudi-Gharaei, & Mirzamani, 2007), and has been used in previous research using Iranian participants (Kolassa et al., 2007). Internal consistency was excellent (Iran α= .97; Australia α= .97; Britain α= .91).

Measures

All measures were translated into Farsi for use with Iranian participants using the following five steps. First, two Iranian native speakers of Farsi, fluent in English, independently translated the measures into Farsi. Second, a back translation of the Farsi version into English was conducted by a third independent bilingual clinical psychologist in Iran. Third, reconciliation of the forward-backward translations was done by the authors. Fourth, the Farsi and English drafts were examined and reviewed by clinical psychologists for appropriateness. Finally, the measures were piloted on a convenience sample to assess ease of comprehension and possible ambiguity.

Measures

AMS

The gold-standard laboratory measure of AMS is the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986; Williams et al., 2007). The AMT presents participants with lists of cue words and asks them to retrieve a specific memory to each word. The following cue words were used in a fixed order; happy, sorry, safe, angry, interest, clumsy, success, hurt, surprise, and lonely. Participants were instructed, "You will find a word at the top of each page. Please recall a memory of an event that happened to you which the word reminds you of. The event could have happened recently or a long time ago. It might be an important event or a trivial event. It is important that the memory you recall is of a specific event". An example was provided. Participants were instructed to write their recalled memory down in the lined space beneath the word and were given 40 seconds to retrieve a memory. Memories were coded as specific if the memory was of an event that lasted less than a day and with a distinct time and place. A specificity ratio was developed by dividing the total number of specific memories by the number of memories provided. If participants failed to generate a memory in the allotted time, their responses were coded as omissions. In line with prior studies, nonspecific memories were also coded as categoric (a memory of conflating over numerous related events) and extended (a single episodic event that lasts longer than a day). Consistent with past studies, specific memory scores were the focus of our analyses (e.g. Neshat Doost et al., 2013). However, the pattern of results was the same if numbers of OGM were substituted into the analyses. Two assessors, blind to the study's aims and PTSD group allocation of participants, rated the memories for all participants. Twenty percent of each data set was also coded by an independent coder who was a trained Farsi-English bilingual researcher for inter-coder reliability estimates. Inter-rater reliability was good (Kappa coefficient = .86). Discrepancies between raters were resolved through discussion.

Self-Concept Measures

The influence of trauma on self-concept was assessed using a portfolio of widely used identity measures; self-cognitions, self-defining memories (SDM) and personal goals.

Self-cognitions. The Twenty Statement Test (TST; Kuhn & McPartland, 1954) was used to quantify trauma-related self-cognitions (e.g. Jobson & O'Kearney, 2008a). The TST asks respondents to provide 20 statements in response to the question 'Who Am I?'

SDM. Using Singer and Salovey's (1993) method, participants were informed that "A self-defining memory is a memory from your life that you remember very clearly, is important to you and leads to strong feelings, that may be either positive or negative, or both. It is the kind of memory that helps you to understand who you are and might be the memory you would tell someone else if you wanted that person to understand you in a more profound way. They are memories that you feel convey powerfully how you have come to be the person you currently are. Please briefly write down 5 self-defining memories".

Goals. Following other researchers' measure of personal strivings (Jobson & O'Kearney, 2008a; Sutherland & Bryant, 2005), participants were instructed to 'Please provide 15 goals that you feel are important for you to achieve'.

Coding. Three independent trauma-themed ratios were developed – self-cognitions, SDMs and goals, as in previous research (Jobson & O'Kearney, 2006; 2008a; Sutherland & Bryant, 2005). These ratios were formed by first coding each response as trauma-themed or not. To be coded as trauma-themed, the response had to be directly and clearly related to trauma or survival; for self-cognitions ('victim', 'survivor', 'scared', 'damaged'), for SDM (recalling a trauma event that is listed in Part 1 of the PDS' list of traumatic events; i.e. accident, natural disaster, non-sexual assault, sexual assault, military combat, child sexual abuse, imprisonment, torture or a life-threatening illness) and for goals ('I want to survive', 'I want to get over the trauma'). The total number of trauma-themed responses was tallied for

each participant and then these totals were divided by the total number of self-cognitions, SDM and goals retrieved, respectively, to provide a trauma-theme ratio for each measure. Interrater reliability (κ) was .90 for self-statements, .90 for SDMs and .80 for goals.

Trauma Experiences

To ensure both cultural and PTSD groups had experienced similar levels of lifetime exposure to traumatic events, the Trauma History Questionnaire was used (THQ; Green, 1996). The THQ is designed to assess exposure to a wide range of potentially traumatic events: crime-related events, general disaster and trauma, and unwanted physical and sexual experiences (Green, 1996). The psychometric properties are good (Mueser et al., 2001) and the THQ has been used cross-culturally (e.g. Jobson & O'Kearney, 2008a).

Depression Symptoms

Given high levels of co-morbidity between depression and PTSD, depression was measured using Part II of the Hopkins Symptom Checklist (HSCL-25; Derogatis, Lipman, Rickels, & Cori, 1974). The HSCL-25 Part II has 15 items that measure depression symptoms. Participants are required to indicate how much each symptom bothered them in the past week from 1 (*not at all*) to 4 (*extremely*). The HSCL-25 depression subscale has adequate psychometric properties (Derogatis et al., 1974) and is regularly used in cross-cultural research (e.g. Jobson & O'Kearney, 2008a). Internal consistency was excellent (Iran α= .94; Australia α= .95; Britain α= .90).

Independence/interdependence

The TST was also used in the current research to ensure the cultural groups did differ significantly in terms of independent/interdependent self-orientation. Researchers have frequently used the TST to examine and control for cultural differences in the individual's sense of self (e.g., Jobson & O'Kearney, 2008a; Wang, 2001). The 20 responses were coded

into comparable categories of the independent–interdependent dichotomy. Self-cognitions were coded as independent (private) if the responses referred to personal qualities, attitudes, beliefs, or behaviours that were not related to other people (e.g. 'I am kind'). Self-cognitions were coded as interdependent if they were collective self-cognitions (responses concerning to particular groups or categories, e.g. 'I am Iranian') or cognitions pertaining to interdependence, friendship, and relationships or to the sensitivity of others (e.g. 'I am in love'). Each participant received an independent score, which was the ratio of independent statements divided by number of self-cognitions provided. Interrater reliability was good (κ =.83).

Procedure

Ethical approval was gained from Australian National University (Australia), National Health Service Research Ethics Committee (UK) and Tarbiat Moallem University and Tehran Medical University (Iran). Participants met with the researchers and completed the goal task, AMT (only the British and Iranian groups completed the AMT), SDM, PDS, HSCL-25, THQ, TST and demographics**.** To assess study difficulty and to ensure the groups did not differ significantly in terms of task understanding and responding, participants were also asked to rate "how hard they found the study" on a 10-point scale from 1 (*not at all*) to 10 (*extremely*). Participants received the equivalent of £10.

Results

Participant Characteristics

Participant characteristics are presented in Table 1. A chi square analysis found that the groups did not differ significantly in terms of gender. Two 3 (Culture; Australia, British, Iranian) × 2 (PTSD, no PTSD) ANOVAs, with age and task difficulty as the dependent variables, were used to assess group differences. The main effects and interaction were non-

significant for reported-task difficulty. In terms of age, while the PTSD main effect and interaction were also not significant, there was a culture main effect, $F(2, 115)= 7.57$, $p= .001$; the British, $t(76)= 3.92$, $p < .001$, and Australian groups, $t(81)= 2.45$, $p= .02$, were significantly older than the Iranian group. Given age may have had an influence on autobiographical remembering; the analyses were also conducted including age as a covariate. The results tended to be comparable throughout.

Three 3 (Culture; Australia, British, Iranian) × 2 (PTSD, no PTSD) ANOVAs, with THQ trauma history, depression and PTSD symptoms as the dependent variables, were used. In terms of trauma history, the main effects and interaction were non-significant. In terms of depression, the culture main effect and interaction were also not significant. However, as expected, the PTSD main effect was significant; the PTSD group were significantly more depressed than the no PTSD group, $F(2, 114)= 128.43$, $p< .001$. For PTSD symptoms, the interaction was significant, $F(2, 115)= 3.35$, $p= .04$. Follow-up analyses revealed that, as expected, the PTSD groups scored significantly higher than the no PTSD groups (British, $t(36)= 10.42$, $p< .001$, Australian, $t(41)= 9.80$, $p< .001$; Iranian $t(38)= 14.05$, $p< .0001$). The no PTSD groups did not differ significantly and the Australian PTSD group did not differ significantly from the British or Iranian PTSD groups. However, the British PTSD group had significantly fewer PTSD symptoms than the Iranian PTSD group, $t(34)= 3.57$, $p= .001$. A chi square analysis found that the groups did not differ significantly in terms of PDS trauma type.

To confirm that there were the expected cultural differences in our sample in independent/interdependent self-orientation; groups were compared on the proportion of independent self-statements on the TST. This revealed that participants from the individualistic cultures had a significantly higher proportion of independent self-statements

(*M* = .76, *SD* = .19) than participants in the collectivistic group (*M* = .66, *SD* = .22), *t*(119)= 2.53, *p*= .01, *d*= 0.49.

Research Question 1: AMS

To investigate the influence of culture and PTSD on AMS a 2 (Culture; British, Iranian) × 2 (PTSD, no PTSD) analysis of variance (ANOVA) was used with proportion of specific memories as the dependent variable. In line with previous cross-culture research, the individualistic group (*M* = .55, *SD* = .25) provided a significantly higher proportion of specific memories than the collectivistic group (*M* = .49, *SD* = .18), *F*(1, 74)= 4.48, *p*= .04, η_p^2 = .06. As hypothesized, the PTSD group (*M* = .39, *SD* = .23) provided a significantly lower proportion of specific memories than the no PTSD group (*M* = .61, *SD* = .21), *F*(1, 74)= 20.19, *p*< .0001, η_p^2= .21. The interaction was not significant (*F*< 1) thus providing no support for the effect of PTSD on reducing AMS differing across cultures.

Research Question 2: Self-Concept

To investigate trauma-centeredness, a 3 (Culture: Australia, British, Iranian) × 2 (PTSD, no PTSD) multivariate analysis of variance (MANOVA), with proportion of trauma-themed goals, self-statements and SDM as the dependent variables, was conducted. Figure 1 shows the means for ratings of trauma-themed self-concept. The multivariate effect of culture was not significant, Λ= .91, *F*(6, 224)= 1.73, *p*= .12, η_p^2= .04. The multivariate effect of PTSD was significant, Λ= .58, *F*(3, 112)= 26.65, *p*< .001, η_p^2= .42. Follow-up univariate analyses revealed that, as hypothesized, the PTSD group had a significantly higher proportion of trauma-themed goals, *F*(1, 114)= 28.78, *p*< .0001, η_p^2= .20, self-statements, *F*(1, 114)= 46.86, *p*< .0001, η_p^2= .29, and SDM, *F*(1, 114)= 28.78, *p*< .001, η_p^2= .20, than the no PTSD group. The multivariate effect of the interaction was not significant, Λ= .92, *F*(6, 224)= 1.69,

p= .13, η_p^2= .04. Therefore, regardless of cultural group, those with PTSD had significantly higher ratings of a trauma-themed self-concept than those without PTSD.

Research Question 3: Relationship between AMS and Self-Concept

A correlation analysis was used to examine the relationship between AMS and trauma-themed self-concept (as indexed on the TST). We found a significant, negative correlation between the ratings of a trauma-themed self-concept and proportion of specific memories retrieved, $r(76)$= -.27, p= .02.

Discussion

Study 1a investigated the influence of PTSD and culture on global aspects of autobiographical remembering. First, it was found that the individualistic group provided a significantly higher proportion of specific memories than the collectivistic group. This supports previous research (e.g. Jobson, 2009b; Wang, 2009) and the proposition that the retrieval of specific autobiographical memories is valued in individualistic cultures as they function to differentiate the independent self from others (Wang & Conway, 2004). Importantly, however, despite this cultural difference, those in the PTSD group across cultures provided a significantly lower proportion of specific memories than the no PTSD group. Therefore, OGM seems to be a pan-cultural cognitive marker of PTSD. Second, it was found that pan-culturally, the nature of the self-concept can be influenced by trauma. The findings suggest that, again regardless of one's cultural background, transformations to the existing self-schema may occur post-trauma in an attempt to reduce the inconsistency between the trauma memory and desired goals of the self (Conway, 2005). Universally trauma may dominate much of a PTSD sufferer's life resulting in the trauma experience becoming highly associated with the self-concept and autobiographical knowledge (Brewin, 2011). Third, it was found that the extent to which the self-concept was defined by trauma

was significantly associated with difficulties retrieving specific autobiographical memories. This supports the notion that self-concept alterations can result in poorer memory for experiences about one's past (Brewin, 2011). In sum, the findings of Study 1a suggest that PTSD has the potential to result in pan-cultural deficits in global autobiographical remembering.

Study1b

Study 1b investigated whether culture and PTSD interact to influence the phenomenological properties of the trauma memory itself. As outlined above, cultural influences on autobiographical remembering are considered to operate through language, encoding, organization and retrieval processes (Conway & Jobson, 2012; Jobson, 2009a). However, the PTSD models suggest that the PTSD trauma memory is encoded using lower level perceptual processing, is not integrated and contextualized into the autobiographical knowledge base, and is less associated with verbal access resulting in certain disruptions in phenomenological properties (Brewin et al., 1996; Conway, 2005). Consequently, there should be limited opportunities for the expected cultural elaboration and integration of the trauma memory (Jobson, 2009a) and rather similar distortions should be evident. We hypothesized that PTSD would moderate the usual effect of culture on the nature of the trauma memory, resulting in the trauma memory of those with PTSD having specific disruptions which would be relatively immune to cultural influences.

Secondly, it has been asserted that the proposition made by PTSD models that trauma memories are fragmented, as a result of a lack of integration and contextualization of the PTSD trauma memory, is contradicted by the fact that the trauma memory of those with PTSD tends to be highly integrated into the overall life story and self-concept of the person (as found in Study 1a). Such authors claim that this contradiction indicates that the trauma

memory is in fact too well-integrated into the life story and one's identity (Rubin, Boals, & Berntsen, 2008). In response to this, Brewin (2011) claims that this argument is based on a failure to distinguish between conceptual knowledge and episodic memory; specifically, that it is possible, and often a feature of clinical samples, that the trauma experience dominates much of one's mental life while at the same time their memories of specific distressing scenes are as far as possible excluded from consciousness and thus, remain fragmented and disconnected. To examine these claims we investigated what the relationship was between trauma-themed self-concept (from Study 1a) and trauma memory fragmentation.

Therefore, Study 1b addressed the following two research questions. Are there cultural differences in the degree of distortion and disruption in the phenomenological properties of the PTSD trauma memory? What is the relationship between the extent to which the self-concept is trauma-themed and the degree of trauma memory fragmentation?

Method

Participants and Procedure

The same participants from Study 1 provided trauma and negative memory narratives. Following each of these narratives, the British and Iranian participants (and thus only these groups were included in Study 1b) completed the Autobiographical Memory Questionnaire (AMQ; Rubin, Schrauf, & Greenberg, 2003). The order of the trauma and negative memory tasks was counterbalanced. Narratives and the AMQ were provided following the PDS task outlined in Study 1a.

Phenomenological Properties

Participants were asked to think about the trauma event they identified on the PDS and a negative, non-traumatic event (selected as a comparison memory) that took place in

their lives. To ensure participants engaged with these retrieved memories prior to rating the memories for their phenomenological properties, participants were asked to write about these events "in as much detail as you can. All your writing will be completely confidential. As you write do not worry about punctuation or grammar, just write as much as you can and include thoughts, feelings, reflections, etc." (Jobson, 2011).

To investigate the phenomenological properties of these memories, following each narrative, participants completed the AMQ (Rubin et al., 2003). The AMQ has been used in research to sample a wide range of properties of autobiographical memories (e.g., Rubin et al., 2003; Sheen, Kemp, & Rubin, 2001; Talarico & Rubin, 2003). Participants respond to 18 statements about recollection (i.e. re-living and travelling back in time), sensory components of the memory (i.e. visual, spatial and auditory imagery), language (i.e. event being remembered in words and coherently), remembering (i.e. a rating of remembering rather than just knowing it happened), fragmentation (i.e. parts of the memory missing), belief (i.e. belief in accuracy of memory), rehearsal (i.e. thinking and talking about the event), emotional valence and intensity on 7-point rating scales. These separate subscales were used as indices of these different aspects of memory phenomenology. The AMQ has been used in studies with other cultural groups (Rubin et al., 2007) and in studies investigating the properties of trauma memories (Rubin, Feldman, & Beckham, 2004). In the current study internal consistency was good (sensory $\alpha = .86$; language $\alpha = .73$, recollection $\alpha = .79$).

Results

Research Question 1: Phenomenological Properties

To investigate the influence of culture and PTSD on the phenomenological properties of the PTSD trauma memory, 2 (Memory: trauma, negative) × 2 (Culture: British, Iranian) × 2 (PTSD status: PTSD, no PTSD) mixed ANOVAs, with phenomenological properties

(subscales on the AMQ) as the dependent variables, were used. Support for our hypothesis that the presence of PTSD would moderate the usual effect of culture on the nature of the memory of the trauma, but not for other negative personal memories, would be indicated by a three-way interaction between culture, memory type and PTSD on a given AMQ subscale.

The culture × memory type × PTSD interactions were significant for the following AMQ variables: recollection, $F(1, 71)= 3.85$, $p= .05$, $\eta_p^2= .05$ (Figure 2a), rehearsal, $F(1, 70)= 5.85$, $p= .02$, $\eta_p^2= .08$ (Figure 2b), language, $F(1, 70)= 4.44$, $p= .04$, $\eta_p^2= .06$ (Figure 2c), and fragmentation, $F(1, 70)= 4.60$, $p= .04$, $\eta_p^2= .06$ (Figure 2d). Follow-up analyses of these interactions found that for both the trauma and negative memories the individualistic no PTSD group reported higher recollection (negative memory, $t(38)= 6.70$, $p< .001$, $d= 2.11$; trauma memory, $t(40)= 4.99$, $p< .001$, $d= 1.86$), fragmentation properties (negative memory, $t(38)= 2.74$, $p< .01$, $d= 0.88$; trauma memory, $t(40)= 4.80$, $p< .001$, $d= 1.47$), and language (negative memory, $t(38)= 9.35$, $p< .001$, $d= 1.48$; trauma memory, $t(40)= 6.02$, $p< .001$, $d= 1.82$) than the collectivistic no PTSD group. The individualistic no PTSD group had significantly less rehearsal than the collectivistic no PTSD group for the negative memory, $t(38)= 2.59$, $p= .01$, $d= 0.83$.

For those *with* PTSD, for the negative memory, the individualistic group still reported significantly higher properties of recollection, $t(33)= 5.59$, $p< .001$, $d= 2.11$, fragmentation, $t(32)= 2.48$, $p< .02$, $d= 0.81$, and language, $t(32)= 5.72$, $p< .001$, $d= 1.61$, and significantly lower levels of rehearsal, $t(33)= 3.21$, $p< .01$, $d= 1.19$, than the collectivistic group. However, for the *trauma* memory, the individualistic and collectivistic PTSD groups did not differ significantly in terms of recollection, $t(33)= .39$, *ns*, $d= 0.50$, fragmentation, $t(33)= .89$, *ns*, $d= 0.22$, language, $t(33)= 2.37$, *ns*, $d= 0.55$, and rehearsal, $t(32)= 1.42$, *ns*, $d= 0.48$. Additionally, we found that the PTSD trauma memory had significantly greater recollection,

$F(1, 150)= 36.37$, $p< .001$, $\eta_p^2= 0.19$, and fragmentation, $F(1, 149)= 29.66$, $p< .001$, $\eta_p^2= .17$, when compared to the other three memories (i.e. PTSD negative, no PTSD trauma and no PTSD negative) (this was also found when we examined it in each cultural group separately)[3].

Research Question 2: Self-Concept and Fragmentation

To investigate Research Question 2, a hierarchical multiple regression analysis was used. This explored the role of PTSD status and fragmentation as predictors (Step 1) of trauma-themed self-concept and fragmentation as a moderator of the relationship between PTSD status (i.e. PTSD vs. no PTSD; included as an interaction term: PTSD × fragmentation) and trauma-themed self-concept (Step 2) (Holmbeck, 1997). Fragmentation scores were mean-centred prior to the construction of the interaction terms in order to minimise any problems of multicollinearity and to aid the interpretation of the results (Holmbeck, 2002). A significant amount of variance was accounted for by PTSD status and fragmentation on Step 1 ($R^2= .27$, $p< .001$). As expected based on our findings in Study 1a, PTSD diagnosis significantly predicted trauma-themed self-concept (B=.51, SE= .11, β= .50, t= 4.66, p<.001). However, there was no support for a predictive relationship between fragmentation and trauma-themed self-concept (B=.01, SE= .03, β= .06, t= .51, *ns*). The interaction term did emerge as significant predictor of trauma-themed self-concept (ΔR^2 = .11, B=.18, SE= .05, β= .45, t= 3.54, p=.001). The nature of the interaction was explored in greater detail using the method of simple slopes (Holmbeck, 2002) (Figure 3). The simple

[3] Additionally, the memory type × PTSD interactions were significant for remembering, $F(1,71)= 10.18$, $p< .01$, $\eta_p^2= .13$, intensity, $F(1,70)= 6.43$, $p= .01$, $\eta_p^2= .08$, and sensory properties, $F(1,70)= 18.37$, $p< .001$, $\eta_p^2= .21$. Follow-up analyses found that for the negative memory there was no significant difference between PTSD and no PTSD groups in terms of remembering (PTSD M= 3.75, SD= 1.43; no PTSD M= 4.12, SD= .85), intensity (PTSD M= 3.48, SD= 1.65; no PTSD M= 3.35, SD= 1.44) or sensory detail (PTSD M= 17.67, SD= 5.84; no PTSD M= 18.36, SD= 4.82). However, for the trauma memory those with PTSD reported significantly greater remembering (M= 5.21, SD= 1.78), $t(75)= 2.16$, $p= .03$, $d= 0.64$, intensity (M= 4.84, SD= 1.81), $t(75)= 2.79$, $p< .01$, $d= 0.33$, and sensory ratings (M= 26.07, SD= 6.48), $t(75)= 4.15$, $p< .001$, d = -1.05, than those without PTSD (remembering M= 4.17, SD= 1.47; intensity M= 3.48, SD= 1.70; sensory M= 19.62, SD= 6.34).

slope was significant for participants with PTSD (*B*= .12, *t*= 3.10, *p*< .01). The direction indicates that trauma-themed self-concept tends to be higher at higher levels of fragmentation for this sample. The simple slope was non-significant for those without PTSD (*B*= -.06, *t*= 1.80, *p* = .08).

Discussion

Study 1b investigated whether culture and PTSD interact to influence the phenomenological properties of the trauma memory (relative to another negative memory). As hypothesized, the results suggested that the PTSD trauma memory is somewhat different in its phenomenological properties. Specifically, for both trauma and negative memories the individualistic no PTSD group reported significantly higher recollection, language, and fragmentation properties and significantly less rehearsal than the collectivistic no PTSD group. For those with PTSD, the autobiographical remembering of the negative memory also showed these same cultural differences. These findings illustrate that those from individualistic cultures tend to rate the phenomenological properties associated with their autobiographical memories more highly than those from collectivistic cultures. This aligns with individualistic cultures stressing their unique autobiographical memories to a greater extent than those from collectivistic cultures, thereby affirming the self as an independent unit (Ross & Wang, 2010). The only property that the collectivistic group scored higher on was rehearsal, which may reflect collective activities (such as talking to others), being esteemed in collectivistic cultures (Wang, 2001).

However, importantly, there was no support for any cultural differences in recollection, fragmentation, rehearsal and language for the PTSD trauma memory. The PTSD trauma memory also had significantly greater recollection and fragmentation compared to the other three memory types (i.e. PTSD negative memory, no PTSD trauma memory and the no

PTSD negative memory). Additionally, it was found that while those with and without PTSD, regardless of cultural background, did not differ significantly in terms of the properties of remembering, intensity, and sensory properties associated with the negative memory, those with PTSD had significantly greater remembering, intensity, and sensory ratings associated with their trauma memories than those without PTSD. These findings support PTSD models' suggestion that there is something unique about the phenomenological properties of the PTSD trauma memory as the properties were culturally similar and contained similar distortions.

In terms of the second aim, trauma memory fragmentation did appear to moderate the degree to which the self-concept was trauma-themed. In trauma survivors with PTSD higher trauma memory fragmentation was associated with a greater degree of trauma-themed self-concept. Therefore, our findings support the proposition made by PTSD models that both trauma memory fragmentation and trauma centrality to self-concept are possible. Specifically, that it is possible for the trauma experience to dominate much of one's mental life while at the same time memories of specific distressing scenes are as far as possible excluded from consciousness and thus, remain fragmented and disconnected (Brewin, 2011).

Study 1c

Study 1c investigated whether culture and PTSD interact to influence other aspects of the same trauma and negative event memories, this time focusing on indices of their content. As outlined above, those from individualistic cultures have been found to have lengthier memories with greater autonomous orientation and less other-focus than those from collectivistic cultures (Ross & Wang, 2010). These cultural influences are suggested to operate through language, encoding, organization and retrieval processes (Jobson, 2009a). However, as also outlined above, the PTSD models suggest that for the PTSD trauma

memory these processes are disrupted (Brewin et al., 1996; Conway, 2005). This should result in potentially limited opportunities for the expected cultural elaboration and integration of the PTSD trauma memory (Jobson, 2009a). Therefore, we hypothesized that there would be the usual cultural differences in the memory content variables of the negative memories and in the trauma memories of those without PTSD, however, for the PTSD trauma memory the content variables would be similar and there would be less of the expected cultural emphasis on autonomy and interdependence.

Method

Procedure

The narratives provided in Study 1b were coded for autonomous orientation and other-self focus. All coding was performed on participants' responses in their original language and was based on a scheme that has been used extensively in previous studies (e.g., Jobson & O'Kearney, 2008b; Wang, 2001; Wang & Conway, 2004).

Autonomous orientation

Participants' tendency to express self-determination and autonomy in their memories was indexed using the autonomous orientation variable. The number of occurrences of the following instances was counted and combined to produce an autonomous orientation score for each participant; (a) personal needs, desires or preferences; (b) personal dislikes or avoidance; (c) personal evaluations, judgments or opinions regarding other people, objects or events; (d) retaining control over one's own actions and resisting group or social pressure; and (e) personal achievement or competency.

Other-self ratio

The other-self ratio has been used as an index of the degree to which participants provide non-egotistic memories and thus, their social orientation. Other-self ratio involved

counting the number of times participants mentioned other people and themselves in their memories. An 'other-self ratio' was calculated for each participant by dividing total other by total self mentions.

Reliability

Australian, British and Iranian researchers, one from each background, coded the data. Discussions were conducted to ensure that the same definitions were being applied to the three datasets. Twenty percent of each data set was coded by the independent coder who was a trained Farsi-English bilingual researcher for inter-coder reliability estimates. Raters were blind to hypotheses and discrepancies were resolved through discussion. Interrater reliabilities were good (r= .88).

Results

Table 1 shows the memory content variable means. In terms of length of the memories, only the memory type × culture interaction was significant, $F(2, 113)= 8.90$, $p< .0001$, $\eta_p^2= .14$. The individualistic group had significantly longer memories (negative, $t(117)= 4.26$, $p< .001$, $d= .95$, trauma, $t(118)= 5.03$, $p< .001$, $d= 1.11$) than the collectivistic group. Trauma memories were also significantly longer than the negative memories (individualistic, $t(80)= 6.14$, $p< .001$, $d= .66$, collectivistic, $t(37)= 6.90$, $p< .001$, $d= 0.90$). To partial out the possible influence of baseline differences in memory length, length was included as a covariate.

To investigate the influence of culture and PTSD on the trauma memory content properties, 2 (Memory; trauma, negative) × 3 (Culture; Australian, British, Iranian) × 2 (PTSD status; PTSD, no PTSD) mixed analysis of covariance (ANCOVAs), with memory content properties as the dependent variables and length of memories as a covariate, were used. As in Study 1b, support for our hypothesis that the presence of PTSD would moderate

the usual effect of culture on the memory content of the trauma memory, but not for other negative personal memories, would be indicated by a three-way interaction between culture, memory type and PTSD. Contrary to our hypothesis, across our coding domains the culture × memory type × PTSD interactions were non-significant.

Other/self ratio

Only the culture main effect was significant, $F(2, 112)= 13.15$, $p< .001$, $\eta_p^2= .19$; the individualistic group had significantly less other-focus in their memories than the collectivistic group, $F(1, 116)= 18.50$, $p< .001$, $\eta_p^2= .14$.

Autonomous orientation

Only the PTSD × culture interaction was significant, $F(2, 112)= 3.46$, $p= .04$, $\eta_p^2= .06$. The individualistic no PTSD group had significantly greater autonomous orientation in their autobiographical remembering than the collectivistic no PTSD group, $F(1, 63) = 15.75$, $p < .001$, $\eta_p^2 = .20$. However, the PTSD groups did not differ significantly, $F(1, 49)= 4.18$, *ns*, $\eta_p^2= .08$. The PTSD groups contained significantly less emphasis on autonomy and agency in their remembering than the no PTSD groups (individualistic, $F(1, 78)= 15.69$, $p < .001$, $\eta_p^2= .17$, collectivistic, $F(1, 35)= 8.09$, $p< .01$, $\eta_p^2= .18$).

Discussion

Study 1c investigated the memory content variables of the PTSD trauma memory. We found no evidence to suggest that the PTSD trauma memory was different in terms of its memory content variables. Rather we found similar cultural differences in the negative and trauma memory content variables; those from collectivistic cultures had shorter memories with greater non-egocentricity than the individualistic group. We did however find that PTSD and culture interact to influence autonomous orientation in overall autobiographical remembering; while the individualistic no PTSD group had the expected higher levels of

autonomous orientation in their autobiographical remembering than the collectivistic no PTSD group, the PTSD groups did not significantly differ. Additionally, it was found that those with PTSD had less autonomous orientation in their overall autobiographical remembering than the no PTSD groups. These findings suggest pan-cultural influences of PTSD on expressions of self-determination and autonomy in autobiographical remembering. This may reflect those with PTSD having a threatened sense of autonomy following trauma (Herman, 1992; O'Kearney & Perrott, 2006).

General Discussion

This research investigated the influence of culture and PTSD on autobiographical remembering. There were three main findings. First, there were pan-cultural deficits and distortions in the global autobiographical remembering of those with PTSD. Study 1a found that those with PTSD retrieved significantly fewer specific memories and significantly more trauma-themed personal memories than those without PTSD. Second, Study 1b found evidence to suggest that the PTSD trauma memory was different in terms of its phenomenological properties. Specifically, cultural differences were evident in the phenomenological properties of the negative and trauma memories of those without PTSD. However, for those with PTSD, while these cultural differences were still evident in their negative memories, there were cultural similarities in the phenomenological properties (i.e. recollection, language, fragmentation, rehearsal) of the trauma memories. Additionally, the PTSD trauma memory had significantly greater recollection and fragmentation when compared to the other memory types and those with PTSD, regardless of culture, reported greater sensory and remembering properties for the trauma memory than those without PTSD. The third main finding was that there was no evidence to suggest that PTSD moderated the usual effect of culture on the memory content variables of the trauma memory.

Rather those with PTSD pan-culturally had fewer expressions of self-determination and autonomy in their autobiographical remembering than those without PTSD (Study 1c).

A question that arises from these last two findings is why the PTSD trauma memory is unique in terms of its basic phenomenological properties but not in terms of it memory content variables? In response to this, it is worth considering how memory representations of events are connected to their associated memory narratives (Gauer, Alencosto, & Gomes, 2010). While, most accounts assume that the way narratives are recounted resemble the way events are represented in memory, the little research that has explored the relationship between the subjective, phenomenological qualities of memories and the narrative aspects of reporting autobiographical memories have tended to find few relationships between the two (Gauer et al., 2010). Therefore, in the current study the narratives and the AMQ may be capturing different elements of autobiographical remembering. Providing a narrative requires participants to provide a qualitative, free response account of what happened; it is the reporting of autobiographical memories. Cultural variations in self-construal have been found to characterize and shape the reporting of autobiographical memories since its development in early childhood (e.g., Han, Leichtman, & Wang, 1998). Thus, by adulthood one holds a dominant narrative structure, which aligns with local habits relevant to personal remembering and general rules of social interaction (Han et al., 1998). Therefore, it is not all that surprising that when those with PTSD are asked to recall these experiences in their native language these dominant narrative structures are employed. The phenomenological properties, however, are the subjective, phenomenological qualities of the memories experienced by the individual when recalling the memories. They reflect how an individual assesses and experiences their memories and thus the properties may reflect the distortions and disruptions in the properties of PTSD trauma memory being experienced by the PTSD sufferer.

Additionally, such properties are perceived to be the products of component processes; with each process occurring in a separate behaviourally and neurally defined systems (see Rubin 2006). Therefore, it is possible that for those with PTSD these neural and behaviourally defined systems may be affected resulting in similar distortions.

Our findings support the following assertions of PTSD theories: for PTSD sufferers trauma memories are different from other forms of autobiographical memories, global autobiographical remembering is affected and self-concept can become altered and dominated by thoughts and memories of the trauma (Brewin, 2011). PTSD models account for compromised voluntary access to coherent accounts of the trauma by suggesting that there is a breakdown in everyday processes; high levels of stress alter the operation of autobiographical memory (Brewin, 2011). Specifically, the trauma memory is disconnected from contextual information that normally associates a sensory memory with time, place and other autobiographical memories (Conway & Pleydell-Pearce, 2000). Consequently, the higher meaning based retrieval strategy is difficult to utilize resulting in problematic intentional recall. Given the lack of contextualisation, integration, and verbal and voluntary accessibility of the trauma memory, cultural influences may be reduced and autobiographical remembering distortions culturally similar. Thus, models of PTSD may be applicable for those from other cultural groups.

It is theorized that for those with PTSD global autobiographical remembering is also affected (Brewin, 2011). Individuals hold conceptual knowledge about the self which influences, and is influenced by, the retrieval of episodic memories. Trauma has the potential to threaten perceived self-agency (Brewin 2011; Ehlers, Maercker, & Boos, 2000; Herman, 1992; O'Kearney & Perrott, 2006). Given the self encodes, organises and retrieves autobiographical memories, it is not surprising then that overall autobiographical

remembering of those with PTSD reflects these deficits by containing fewer expressions of self-determination and autonomy. Furthermore, given autobiographical remembering, in turn, develops, expresses and maintains the self (Wang & Conway, 2004), continuously recalling memories that lack autonomy may result in internal threat to self; maintaining PTSD symptoms (Ehlers & Clark, 2000). Second, for sufferers of PTSD attempts are made to reduce the involuntary intrusion of the specific details of the trauma by diverting the hierarchical memory search towards higher-level generic representations of personal experience before specific experiences are recalled (Williams et al., 2007). Those with PTSD from both cultural groups were found to have reduced AMS suggesting that even in collectivistic cultures, where AMS is less emphasised, those with PTSD may be making similar attempts at avoidance.

Finally, the self-concept of those with PTSD can become dominated by thoughts and memories of trauma (Berntsen & Rubin, 2006). Our findings pan-culturally support this proposition. Thus, in the aftermath of trauma, the trauma memory of those with PTSD may not align with the desired goals of the self-concept and be hard to integrate with previously held assumptions about the self and world. Consequently, the trauma becomes central to people's mental life as they struggle to resolve these discrepancies and spend a great deal of time recalling these events and ruminating about them resulting in the trauma becomes highly associated with self-concept (Brewin, 2011).

Trauma-focused therapies target the trauma memory in attempts to elaborate and integrate the trauma memory in order to reduce re-experiencing symptoms (Ehlers & Clark, 2000). Our findings suggest that such interventions may be warranted in those from collectivistic cultures. Supporting this, research has found that exposure based therapies are effective cross-culturally (e.g., Paunovic & Ost, 2001). However, the question arises, does

memory integration of those from collectivistic cultures need to differ to those from individualistic cultures given other autobiographical memories culturally differ in content and organisation?

Negative changes in self-concept have been found to predict a greater risk of developing PTSD (e.g., Dunmore, Clark & Ehlers, 2001; Ehlers, Mayou, & Bryant, 1998) and poorer response to exposure in those receiving treatment (Ehlers, Clark, Dunmore, Jaycox, Meadows, & Foa, 1998). Thus, the findings highlight the importance of considering self-concept in PTSD interventions, such as schema work that addresses 'vulnerable identities' (Brewin, 2003), integrating current views of the self into existing self-knowledge, and making sense of the trauma in respect to existing aspects of self-concept (Hembree & Foa, 2004). However, it is potentially important that such interventions consider the influence of trauma on not only private aspects of self but also public and communal aspects and the influence of culture on self-concept. Finally, PTSD interventions may also need to target general autobiographical remembering such as enhancing memory specificity (Neshat-Doost et al., 2013) and autonomy (Herman, 1992). However, such interventions may again need to consider cultural differences in expected specificity and autonomy levels.

We acknowledge the shortcomings of this research. As this was the first research exploring these issues using a cross-country design, we used the PDS as a measure of PTSD. While there is good convergent validity with the SCID, future research should use a structured clinical interview to derive formal diagnoses. Second, only one collectivistic cultural group was used, thus the findings may represent something unique about the groups selected. Additionally, our samples were of a modest size but were suitably powered. Future research should replicate the studies using different cultural groups and larger sample sizes. Future research would also benefit from more closely matched trauma experiences. However,

there were no group differences in trauma exposure, traumas in all groups were predominately car accidents and the findings were equivalent when only car accident trauma survivors were included in the analyses. Third, the cross-sectional design precludes causal inferences. In summary, the findings suggest that the autobiographical remembering of those with PTSD appears to be culturally similar in terms of disruptions and distortions.

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Table 1.
Participant Characteristics and Means for Memory Content Variables for the Negative and Trauma Memories (Study 1c)

	British		Australian		Iranian	
	No PTSD	PTSD	No PTSD	PTSD	No PTSD	PTSD
Characteristics	(*n*= 22)	(*n*= 16)	(*n*= 26)	(*n*= 17)	(*n*= 20)	(*n*= 20)
Age – years	44.00 (13.16)	44.50 (15.03)	38.23 (14.09)	41.71 (11.00)	34.60 (11.90)	31.45 (10.93)
Gender	7 female	9 female	5 female	5 female	3 female	9 female
Task difficulty	4.68 (2.57)	4.06 (2.35)	4.39 (2.45)	5.02 (2.99)	4.85 (2.23)	5.85 (2.05)
Depression	25.29 (7.07)	39.18 (10.06)	22.76 (6.50)	37.11 (9.14)	18.93 (4.97)	37.95 (7.74)
PDS Trauma Type (*n*)						
Accident	15	11	15	11	18	17
Assault	5	2	7	4	2	3
Illness	2	3	4	2	0	0
Trauma History						
Crime	1.71 (1.65)	1.19 (1.56)	1.45 (.94)	2.10 (2.27)	1.08 (1.35)	1.53 (1.23)
Disaster	4.52 (1.72)	4.75 (2.41)	5.60 (2.03)	5.60 (2.68)	3.27 (2.88)	4.71 (2.20)
Sexual	.86 (1.01)	1.06 (1.53)	1.00 (1.08)	1.15 (1.63)	.54 (1.10)	1.59 (1.54)
PDS Total	6.50 (5.18)	26.06 (6.39)	5.38 (7.70)	30.65 (9.07)	7.15 (4.21)	34.60 (7.66)
Memory Content Variables						
Length						
Negative	68.14 (39.03)	66.00 (29.37)	131.34 (50.96)	109.29 (76.00)	61.37 (25.24)	41.79 (27.11)
Trauma	143.73 (52.74)	126.25 (48.31)	146.69 (52.59)	132.59 (69.78)	95.05 (36.68)	64.74 (25.03)
Autonomous Orientation						
Negative	5.00 (3.25)	3.06 (2.11)	6.24 (3.48)	3.82 (2.16)	1.95 (.52)	1.16 (.60)
Trauma	5.05 (2.38)	2.50 (1.90)	5.76 (3.78)	3.82 (2.30)	1.90 (.56)	1.74 (.65)
Other-Self Ratio						
Negative	.45 (.43)	.51 (.51)	.70 (.47)	.72 (.49)	1.11 (.41)	1.42 (.58)
Trauma	.98 (.76)	.60 (.36)	.85 (.59)	.67 (.38)	1.20 (.68)	1.54 (.88)

Note. PTSD = Posttraumatic Stress Disorder; PDS = Posttraumatic Stress Diagnostic Scale. Standard deviations are represented in parentheses.

*Figure 1.*Trauma-themed ratio means (±1SE) for goals, self-statements and self-defining memories (SDM)

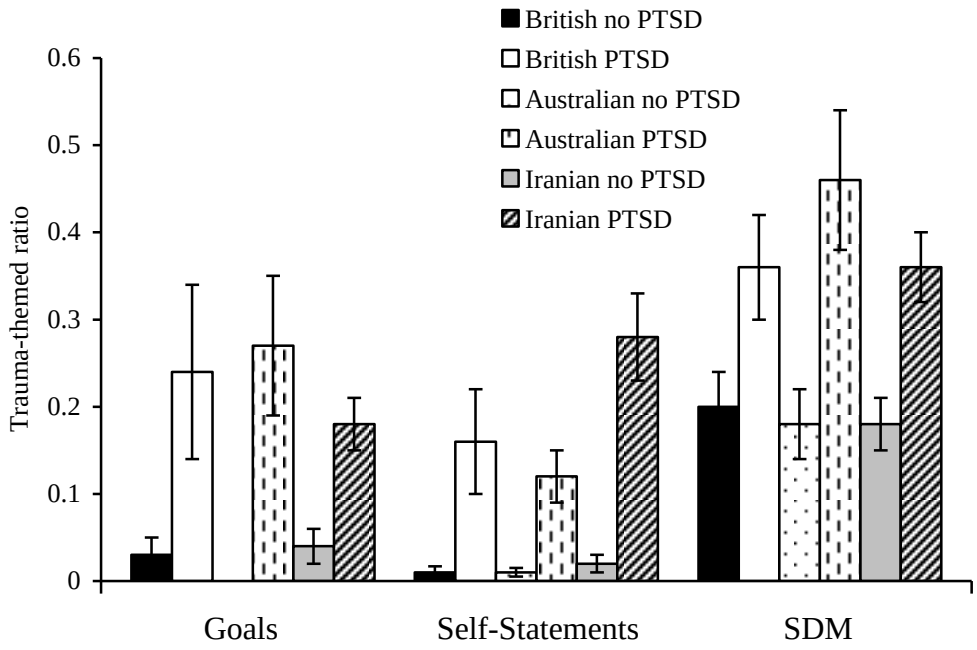

Figure 2. Autobiographical memory phenomenological properties for recollection (2a), rehearsal (2b), language (2c) and fragmentation (2d) for the British PTSD, British no PTSD, Iranian PTSD and Iranian no PTSD Groups.

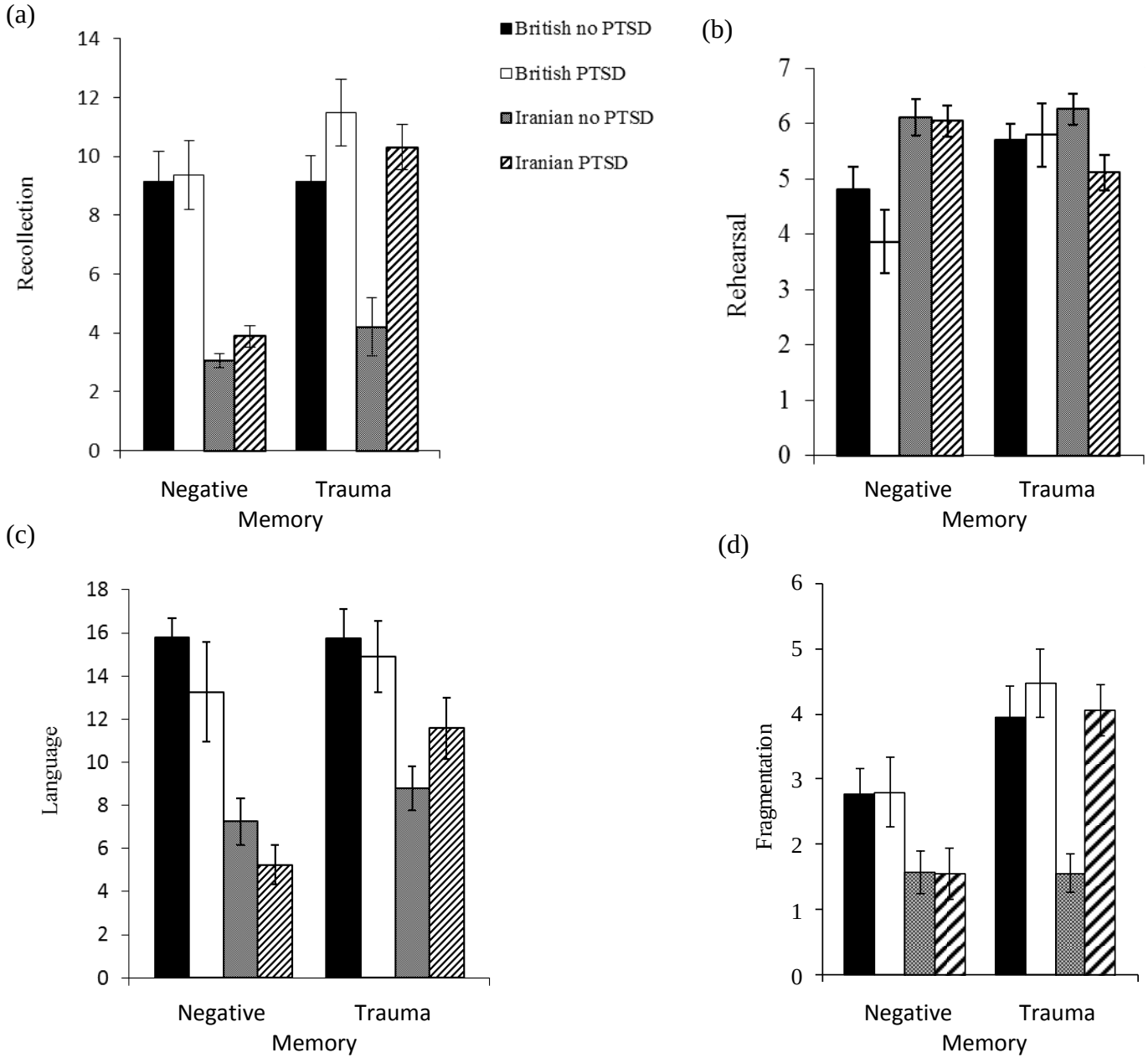

Figure 3. Simple slopes for trauma-themed self-concept of trauma survivors with and without posttraumatic stress disorder (PTSD) at 1*SD* below the mean, the mean, and 1*SD* above the mean of self-reported trauma memory fragmentation